

MOUNTAIN MART (PWS # 2290055) SOURCE WATER ASSESSMENT FINAL REPORT

May 13, 2002



State of Idaho Department of Environmental Quality

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Executive Summary

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality (DEQ) is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within a 1,000-foot radius of your drinking water source, sensitivity factors associated with the source, and characteristics associated with either your aquifer or watershed in which you live.

This report, *Source Water Assessment for Mountain Mart: Public Water System (PWS) #2290055* describes the public drinking water system, the associated potential contaminant sources located within a 1,000-foot boundary around the drinking water source, and the susceptibility (risk) that may be associated with any associated potential contaminants. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and is not intended to undermine the confidence in your water system.**

The *Mountain Mart* drinking water system consists of a single well. The system serves approximately 50 people through 14 connections.

Final susceptibility scores are derived from System Construction scores, Hydrologic Sensitivity scores, and Potential Contaminant/Land Use scores. Potential Contaminants/Land Uses are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The system rated high susceptibility to IOCs, VOCs, SOCs, and moderate to microbials. The high ratings can be attributed to the number and nature of potential contaminant sources within the circle of a 1000-foot radius about the well, and a missing well log and sanitary survey. Missing information automatically defaults to a higher rating. If the well log and sanitary survey were available during the susceptibility analysis scores might have been lower. A detection (December 1994) of total coliform occurred in the well after the uncapped well experienced an episode of surface flooding. The well was then capped and no more detections of total coliform have occurred.

The initial computer generated contaminant source inventory conducted by the DEQ located two potential contaminant sources within the 1,000-foot boundary. In addition, the system operator located a dump across highway 95 and a gas station approximately 800 feet to the south of the wellhead. The USGS maps provided the highway location. These sites have been summarized and included in Table 1. A copy of the susceptibility analysis worksheet for your system along with a map showing any potential contaminant sources is included with this summary.

Table 1. Mountain Mart, Potential Contaminant Inventory

SITE #	Source Description ¹	Source of Information	Potential Contaminants ²
1	SARA site	Database Search	IOC, VOC, SOC
2	Dump site	Enhanced Inventory	IOC, VOC, SOC, Microbes, Leachables
3	Gas Station	Enhanced Inventory	IOC, VOC, SOC, Leachables
	Highway 95	GIS Map	IOC, VOC, SOC, Microbes, Leachables

¹SARA = Superfund Amendments and Reauthorization Act

²IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Analysis

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants.

Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone (aquitard) above the producing zone of the well. Slowly draining soils such as fine-grained silts and clays typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity was moderate for the well. The soils are poorly to moderately drained. Scores were increased because the vadose zone composition, water table depth, and aquitard's presence was unknown. A well log would have provided the missing information, which might have lowered the scores.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a

low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The Mountain Mart drinking water well rated high susceptibility for system construction. The wellhead is outside of the 100 year floodplain. However, scores were increased because it is unknown if the wellhead and surface seal are maintained, if the casing and surface seal extend into low permeability units, or if the highest producing zone is more than 100 feet below the water table. Based on the missing information, it is impossible to label the well as meeting current IDWR standards. The missing information can be found on a well log and sanitary survey. If they had been available during this analysis, well construction scores might have been lower.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Six-inch diameter wells require a casing thickness of at least 0.288-inches and eight-inch casings are required to be 0.322 inches thick. Well tests are required at the design pumping rate for 24 hours or until stabilized drawdown has continued for at least six hours when pumping at 1.5 times the design pumping rate.

Potential Contaminant Source and Land Use

The well rated high land use for IOCs (e.g., arsenic, nitrate), moderate for VOCs (e.g., petroleum products), high for SOCs (e.g., pesticides), and low for microbial contaminants (e.g., bacteria). The scores were influenced by the gas station, dump, SARA site, and highway 95. The highway, dump, and gas station are also considered potential leachable contaminant sources.

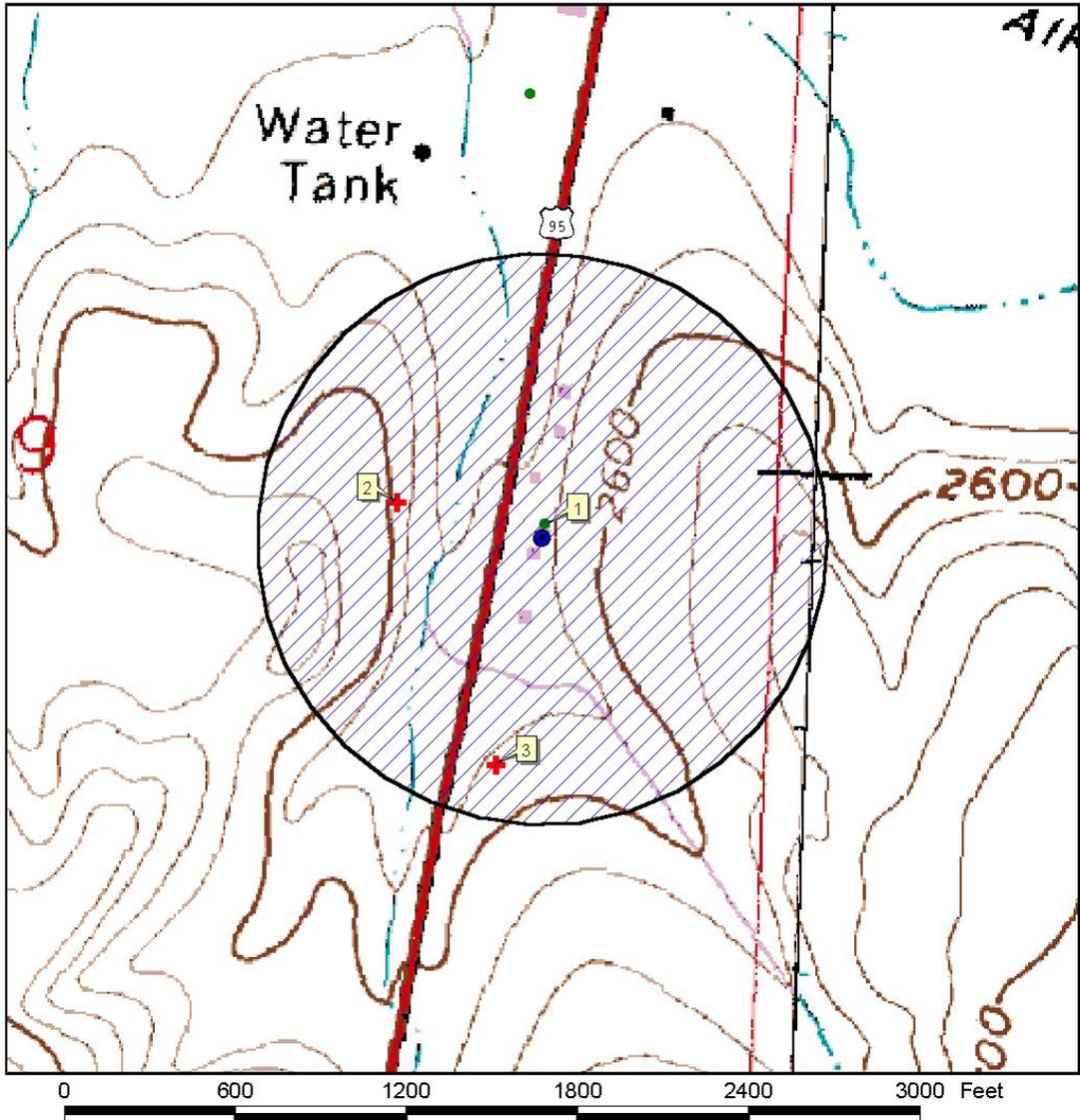
Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead automatically gives a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Additionally, having potential contaminant sources within 50 feet of the wellhead will give an automatic high susceptibility rating.

In terms of total susceptibility, the well rated high for IOCs, VOCs, SOCs, and moderate for microbial contaminants.

Mountain Mart: WELL #1

PWS Number: 2290055



LEGEND



-  1B (3 yr TOT)
-  Wellhead
-  Enhanced Inventory
-  CERCLIS Site
-  RICRIS Site
-  Dairy
-  LUST Site
-  Closed UST Site
-  Open UST Site
-  Business Mailing List
-  NPDES Site
-  Mine
-  AST
-  Toxic Release Inventory
-  SARA Title III Site (EPCRA)
-  Recharge Point
-  Injection Well
-  Group1 Site
-  Cyanide Site
-  Landfill
-  Wastewater Land App. Site

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POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **Superfund**, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (IDEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by IDEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.273)
- 2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction		SCORE			
Drill Date	unknown				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	NO				0
Well meets IDWR construction standards	NO				1
Wellhead and surface seal maintained	NO				1
Casing and annular seal extend to low permeability unit	NO				2
Highest production 100 feet below static water level	NO				1
Well located outside the 100 year flood plain	YES				0
Total System Construction Score		5			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES				0
Vadose zone composed of gravel, fractured rock or unknown	YES				1
Depth to first water > 300 feet	NO				1
Aquitard present with > 50 feet cumulative thickness	NO				2
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	DRYLAND AGRICULTURE	1	1	1	1
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		3	1	3	1
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	4	4	4	2
(Score = # Sources X 2) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	3	3	3	
4 Points Maximum		3	3	3	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B Greater Than 50% Non-Irrigated Agricultural		2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		13	13	13	6
Cumulative Potential Contaminant / Land Use Score		16	14	16	7
4. Final Susceptibility Source Score		13	13	13	12
5. Final Well Ranking		High	High	High	Moderate